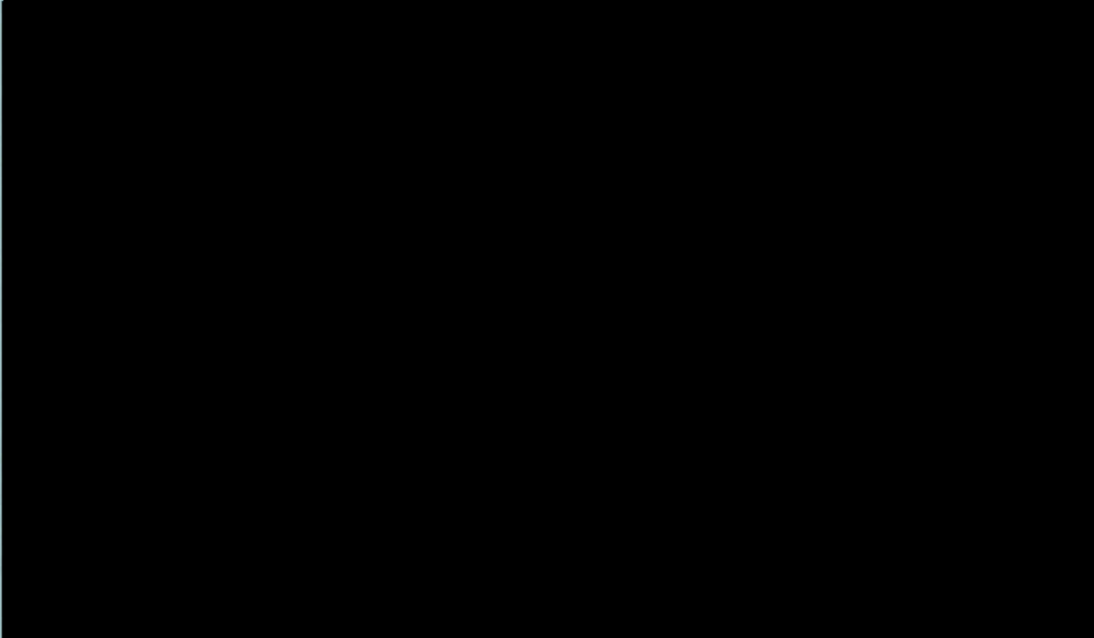


PHONE NUMBERS



Exec, Commander AU	2045
Base Operations, Dispatch	6961/6962
Base Operations, Passenger Service	6454/6760/7372
Billeting	2055/2430/7390
Command Post	2862/7333
Officers Club (Paging Info)	264-1731
Officers Club (Caterer)	264-6946
AU Protocol	2095
Time of Day Service	7138
Transportation/VIP	6098/5708
Transportation (After Duty Hrs)	5038
Weather Forecast Recorded	6082
Weather Forecaster	2071

**CHECKLIST FOR
HOST OFFICERS**

As a host officer, it is your responsibility to insure that the guest has a trouble free visit. Attention to detail is the key!

**AIR WAR COLLEGE (AU)
UNITED STATES AIR FORCE**

Date 1991-1992

General

1. Read or review AWCRC 900-5.
2. Read background info on guest.
3. Confirm arrival and departure schedule through CCP and obtain visitor's folder and room key the afternoon before visit.
4. Coordinate with CCP plans for guest's visit to include social activities, meals, unscheduled time, etc. (Note: host officer's spouse may be asked to participate in protocol arrangements if guest brings spouse.)
5. Order staff car transportation to cover entire visit. (Record name of person with whom reservations were made.) CCP will assist with transportation as required.
6. Review para 3 of AWCRC 900-5. CCP will determine with executive officers what the participation of AU/CC and AWC/CC will be.

Prior to Arrival of Guest

1. Confirm with CCP that the guest is pre-registered and room has been checked. (If guest arrives on a holiday or weekend, host officer is responsible for registration and room check.)
2. Advise department chairman of planned ETA.
3. Host officer should telephone Base Operations (6961) at least one hour prior to scheduled arrival to confirm ETA.

Upon Arrival

1. Meet and escort guest as appropriate.
2. Ascertain any special requirements of guest.
3. Brief guest on curriculum, academic freedom, non-attribution, class composition, etc. (See AWCRC 11-1)
4. Advise of AWC taping and TV procedure (if required) and obtain views as to future use of material by AWC. (See AWCRC 11-7)
5. Obtain release of presentation material if included with folder.
6. Brief guest on planned entertainment and guest lists.
7. Obtain and secure any classified materials. (See Para 3f, Atch 1, AWCRC 900-5)
8. Ask guest about visual aid requirements.
9. Confirm guest's departure plans. If changes are desired, notify department chairman and CCP.
10. Notify department chairman ASAP of any conflict in planned schedule.

11. Escort guest to and from entertainment.
12. Arrange for telephone call, if desired, to awaken guest (Ext 2479/2430)
13. Reaffirm guest's position title, lecture/discussion and classification, and advise department chairman.

Day of Lecture (as applicable)

1. Escort guest to breakfast, if desired.
2. Comply with CCP memo for accomplishment of financial matters.
3. Take guest to front (inner circle) entrance of Bldg 1401 and escort to auditorium for facilities briefing. Adjust lectern for guest's height and turn on lectern light. Ascertain type of microphone to be used.
4. Turn in visual aids to audio visual staff.
5. Call Commandant's office upon guest's arrival.
6. Brief guest on auditorium procedures.
7. Have guest sign "Distinguished Visitor" log in speaker lounge.
8. Guide guest to designated seat for introduction.
9. Escort guest to planned activities, as appropriate.
10. Recover guests training aids for him/her.
11. Check guest out of quarters. Ensure all billeting charges are paid before guest departs.

Protocol Luncheon

1. Escort guest to proper room in club.
2. Appoint a student attendee to extend "thanks" to guest at conclusion of lunch. (Host will place napkin on plate to end lunch).
3. Notify luncheon host of student's name and point him out.
4. Advise host of guest's departure time.
5. Insure that transportation is available.

Departure

1. Host officers will telephone 6454/6760/7372 (PAX Services) at least one hour prior to guest's departure time on military aircraft. Inform them of the individuals departing and their anticipated time of arrival at the aircraft.
2. Escort guest to place of departure and remain until he/she departs.

INTERNATIONAL OFFICERS

Australia (2)
Bangladesh
Brazil
Canada
Chile
Columbia
Egypt
Finland
France
Germany
India
Indonesia
Israel (2)

AERO RATING
28 Pilots
1 Navigator
3 Non-rated

Japan
Korea (2)
Mali
Mexico
Nigeria
Norway
Oman
Philippines
Saudi Arabia (2)
Spain
Turkey (2)
UAE
UK (2)

Total number of students: 32
Total number of countries: 26

AIR WAR COLLEGE CLASS OF 1992

AFFILIATION

155 Active Duty USAF
 6 AFRES
 5 ANG
 20 Army
 15 Navy
 1 Coast Guard
 5 Marines
 11 Civillians
 32 International Officers

250 TOTAL STUDENTS

OTHER DATA

6 Aerospace Research Institute
 11 Females: 7 USAF, 3 Civ, 1 Res
 9 Blacks
 5 Non-line (2 JAG, 2 Chap, 2 Med)

AERO RATING: (US)

	<u>USAF</u>	<u>ANG</u>	<u>AFRES</u>	<u>USA</u>	<u>USN</u>	<u>USMC</u>	<u>USCG</u>	<u>Total</u>
Pilots-----	54	3	2	3	9	2	1	
Navigators--	21	0	0	0	5	*1	0	
Non-rated--	80	2	4	17	1	2	0	
Total--	155	5	6	20	15	5	1	

* Radar intercept officer

EDUCATION

43 Bachelors
 187 Masters
 2 PhDs

MARITAL STATUS

229 Married
 21 Single

ACCOMPANIMENT

170 Accompanied
 59 Unaccompanied

AVERAGE AGE: 42 (US)

AV YRS SVC: 19 (US)

CONCEPTUAL SPIRAL

Dec 90 / Jan 91

Paul Boyd

FOCUS

To make evident how science, engineering, and technology influence our ability to interact and cope with an unfolding reality that we are a part of, live in, and feed upon.

FOR OPENERS

let's reexamine our abstract

? - What do we find - ?

KEY PASSAGE

...the theme that weaves its way through this "Discourse on Winning and Losing" is not so much contained within each of the six sections, per se, that make up the "Discourse"; rather, it is the kind of thinking that both lies behind and makes up its very essence. For the interested, a careful examination will reveal that the increasingly abstract discussion surfaces a process of reaching across many perspectives; pulling each and every one apart (analyses), all the while intuitively looking for those parts of the disassembled perspectives which naturally interconnect with one another to form a higher order, more general elaboration (synthesis) of what is taking place. As a result, the process not only creates the "Discourse" but it also represents the key to evolve the tactics, strategies, goals, unifying themes, etc., that permit us to actively shape and adapt to the unfolding world we are a part of, live in, and feed upon.

? - WHY IS THIS PASSAGE KEY - ?

- Because it suggests a general way by which we can deal with the world around us.

More specifically we
shall show that:

- By exploiting the theme contained within this passage and by examining the practice of science/engineering and the pursuit of technology we can evolve a conceptual spiral for comprehending, shaping, and adapting to that world.

NOW

If the practice of science/engineering and the pursuit of technology
are going to be a key for unveiling this "conceptual spiral",

we should ask ourselves:

In speaking of science, engineering, and technology
what do we mean?

SIMPLE-MINDED MESSAGE

- Science can be viewed as a self-correcting process of observation, hypothesis, and test.
whereas
- Engineering can be viewed as a self-correcting process of observation, design and test.
while
- Technology can be viewed as the wherewithal or state of the art produced by the practice of science and engineering.

? - RAISES QUESTION - ?

What has the practice of science, engineering and the pursuit
of technology given us or done for us?

EXAMPLES FROM SCIENCE

Some Outstanding Contributors

- Isaac Newton (1687)
- Adam Smith (1776)
- A.M. Ampere/C.F. Gauss (1820's/1830's)
- Carnot/Kelvin/Clausius/Boltzman (1824/1852/1865/1870's)
- Faraday/Maxwell/Hertz (1831/1865/1888)
- Darwin & Wallace (1838/1858)
- Marx & Engels (1848 - 1895)
- Gregory Mendel (1866)
- Henri Poincare (1890's)

Contributions

- "Exactness"/predictability via laws of motion/gravitation
- Foundation for modern capitalism
- Exactness/predictability via electric/magnetic laws
- Decay/disintegration via second law of thermodynamics
- Union of electricity & magnetism via field theory
- Evolution via theory of natural selection
- Basis for modern "scientific socialism"
- Inherited traits via his laws of genetics
- Inexactness/unpredictability via gravitational influence of three bodies

EXACT

Non-Linear

EXAMPLES FROM SCIENCE

Some Outstanding Contributors

- Max Planck (1900)
- Albert Einstein (1905/1916)
- Bohr/de Broglie/Heisenberg/Schrodinger/Dirac/et al (1913/1920's...)
- L. Lowenheim & T. Skolem (1915 – 1933)
- Godel/Tarski/Church/Turing/et al (1930's ...)
- Claude Shannon (1948)
- Crick & Watson (1953)
- Lorenz/Prigogine/Mandelbrot/Feigenbaum/et al (1963/1970's...)
- G. Chaitin/C. Bennett (1965/1985)

Contributions

- Discreteness/discontinuity via his quantum theory
- Exactness/predictability via his special & general relativity theories
- Uncertainty/indeterminism in quantum physics
- Unconfinement (non-categoricalness) in mathematics & logic
- Incompleteness/undecidability in mathematics & logic
- Information theory as basis for communication
- DNA spiral helix as the genetically coded information for life
- Irregularity/unpredictability in nonlinear dynamics
- Incompleteness/incomprehensibility in information theory

EXAMPLES FROM ENGINEERING

Some Outstanding Contributors

- Savery/Newcomen/Watt (1698/1705/1769)
- George Stephenson (1825)
- H. Pixii/M.H. von Jacobi (1832/1838)
- Samuel Morse (1837)
- J.N. Niepce/J.M. Daguerre/Fox Talbot (1839)
- Gaston Plante (1859)
- Z Gramme/H. Fontaine (1869/1873)
- Nicholas Otto (1876)
- Alexander G. Bell (1876)
- Thomas A. Edison (1877)
- Thomas A. Edison (1879)
- Werner von Siemens (1879)
- Germany (1881)
- Charles Parsons (1884)
- Benz/Daimler (1885/1886)
- T.A. Edison/J. LeRoy/T. Armat/et al (1890-1896)
- N. Tesla/G. Marconi (1893/1895)
- Rudolf Diesel (1897)
- Italy (1902)

Contributions

- Steam engine
- Steam railway
- AC generator/AC motor
- Telegraph
- Photography
- Rechargeable battery
- DC generator/DC motor
- 4-cycle gasoline engine
- Telephone
- Phonograph
- Electric light bulb
- Electric locomotive
- Electric metropolitan railway
- Steam turbine
- Gasoline automobile
- Motion-picture camera/projector
- Wireless telegraph
- Diesel locomotive
- Electric railway

EXAMPLES FROM ENGINEERING

Some Outstanding Contributors

- Wright Brothers (1903)
- Christian Hulmeyer (1904)
- V. Paulsen/R.A. Fessenden (1904/1906)
- John A. Fleming/Lee De Forest (1904/1907)
- Tri Ergon/Lee De Forest (1919/1923)
- USA-Pittsburgh (1920)
- American Car Locomotive (1925)
- J.L. Baird (1926)
- Warner Brothers (1927)
- Germany/USA (1932/1934)
- Britain/USA/Germany (1935-1939)
- Germany/Britain/USA (1935/1936/1939)
- Hans von Ohain/Germany (1939/1939)
- Eckert & Mauchly (1946)
- Bardeen & Brattain & Shockley (1947)
- Ampex (1955)
- J. Kilby/R. Noyce (1958/1959)
- T.H. Maiman (1960)
- Philips (1970)
- Sony (1980)

Contributions

- Gasoline powered airplane
- Radar
- Wireless telephone
- Vacuum tube
- Sound motion picture
- Public radio broadcasting
- Diesel-electric locomotive
- Television
- Jazz singer/sound motion picture
- Diesel-electric railway
- Operational radar
- Television broadcasting
- Jet engine/jet airplane
- Electronic computer
- Transistor
- Video recorder
- Integrated electric circuit
- Laser
- Video cassette recorder
- Video camcorder

? - RAISES QUESTION - ?

Looking at the past via the contributions these people have provided the world:
What can we say about our efforts for now and for the future?

GRAND MESSAGE

In a mathematical/logical sense we can say:

- Taken together the theorems associated with Godel, Lowenheim & Skolem, Tarski, Church, Turing, Chaitin, and others reveal that: Not only do the statements representing a theoretical system for explaining some aspect of reality explain that reality inadequately or incompletely but, like it or not, these statements spill out beyond any one system and do so in unpredictable ways.

or conversely

- These theorems reveal that: We can neither predict the future migration and evolution of these statements nor just confine them to any one system nor suggest that they fully embrace any such system.

Now if we extend these ideas and build upon them in a scientific/engineering sense we can say:

- Any coherent intellectual or physical systems we evolve to represent or deal with large portions of reality will at best represent or deal with that reality incompletely or imperfectly.
- Moreover, we neither have nor can we create beforehand a supersystem that can forecast or predict the kind of systems we will evolve in, the future to represent or deal with that reality more completely or more perfectly.
- Furthermore, such a supersystem can neither forecast nor predict the consequences that flow from those systems that we create later on.
- Going even further, we cannot determine or discern the character or nature of such systems (super or otherwise) within themselves.

Which altogether imply that:

- People using theories or systems evolved from a variety of information will find it increasingly difficult and ultimately impossible to interact with and comprehend phenomena or systems that move increasingly beyond and away from that variety—that is, they will become more and more isolated from that which they are trying to observe or deal with, unless they exploit the new variety to modify their theories/systems or create new theories/systems.

? - RAISES QUESTION - ?

Taken together, what do the many contributions and Grand Message suggest?

IMPRESSION

While we can comprehend and predict some portions of the everchanging world that unfolds before us, other portions seem forever indistinct and unpredictable.

? - RAISES QUESTION - ?

Very nice, but what does all this have to do with our ability to thrive and grow in such a world that is seemingly orderly and predictable yet disorderly and unpredictable?

COMMENT

- To get at this question let's take a closer and more general look at what science, engineering, and the pursuit of technology produce and how this is accomplished.
- Furthermore, suspecting that these practices and pursuit are not wholly accidental nor obvious and that they seem to change us in some ways, let's also examine what keeps the whole enterprise going and how this enterprise affects us personally.

In other words in order to gain a richer image of science, engineering, and technology we will address the following questions:

- What do science, engineering and technology produce?
- How is this accomplished?
- What is the driving mechanism that keeps the process alive and ongoing; or put another way, what phenomena sustains or nourishes the whole enterprise?
- Finally, how does this enterprise of science, engineering, and technology affect us personally as individuals, as groups, or as societies?

FIRST OF ALL

? - What do science, engineering, and technology produce - ?

If we examine the contributions from the practice of science and engineering and generalize from these individual contributions what do we see? We see new ideas, new systems, new processes, new materials, new etc.

In other words

Science, engineering, and technology produce change via novelty.

? - How is this novelty produced - ?

- To examine novelty we speak of it in terms of those features that seem to be part of that novelty. In other words, we reduce a novel pattern down to some features that make up that pattern. Different people in examining such a pattern may see differing features that make it up. In other words, there are different ways by which a pattern can be reduced hence the possibility for differing features or parts. Regardless of how it comes out, we call this process of reduction: analysis.
- Pushing this process even further we can reduce many different patterns (analyses) to parts that make up each pattern and use these parts, or variations thereof, to make a new pattern. This is done by finding some common features that interconnect some or many of these parts so that a new pattern—whether it be a new concept, new system, new process, new etc.—can be created. We call this process of connection: synthesis.
- Now if we test the results of this process with the world we're dealing with, we have an analytical/synthetic feedback loop for comprehending, shaping, and adapting to that world.

Pulling all this together we can say that:

Novelty is produced by a mental/physical feedback process of analyses and synthesis that permits us to interact with the world so that we can comprehend, cope with, and shape that world as well as be shaped by it.

which carries us to the question

? – What is the driving mechanism that keeps the process alive and ongoing; or put another way, what phenomena sustains or nourishes the whole enterprise. – ?

- One thing is clear: If our ideas and thoughts matched perfectly with what goes on in the world; and if the systems or processes we designed performed perfectly and matched with whatever we wanted them to do, what would be the basis for evolving or creating new ideas, new systems, new processes, new etc.? The answer: There wouldn't be any!

In other words

- The presence and production of mismatches are what sustain and nourish the enterprise of science, engineering, and technology, hence keep it alive and ongoing--otherwise there would be no basis for it to continue.

VERY NICE
BUT

? –

How does this enterprise of science, engineering, and technology affect us personally as individuals, as groups, or as societies
--

 – ?

- As already shown the practice of science/engineering and the pursuit of technology not only change the physical world we interact with—via new systems, new processes, new etc.—but they also change the mental/physical ways by which we think about and act upon that world.

In this sense

- The practice of science/engineering and the pursuit of technology permit us to continually rematch our mental/physical orientation with that changing world so that we can continue to thrive and grow in it.

Put simply

- The enterprise of science, engineering, and technology affects us personally as individuals, as groups, or as societies by changing our orientation to match with a changing world that we, in fact, help change.

NOW

- If we reverse direction and reexamine where we have been we can see that: Without the intuitive interplay of analyses and synthesis we have no basic process for generating novelty; no basic process for addressing mismatches between our mental images/impressions and the reality it is suppose to represent; and no basic process for reshaping our orientation toward that reality as it undergoes change.

Put simply

- Without the interplay of analyses and synthesis we have no basis for the practice of science/engineering and the pursuit of technology—since novelty, mismatches, and reorientation as the life blood ingredients that naturally arise out of such practice and pursuit can no longer do so.

VIEWED IN THIS LIGHT

The preceding statements seem to suggest that the "Simple-Minded Message" presented near the beginning whereby:

Science can be viewed as a self-correcting process of observation, hypothesis, and test

whereas

Engineering can be viewed as a self-correcting process of observation, design, and test

should be modified as follows:

Science can be viewed as a self-correcting process of observations, analyses/synthesis, hypothesis, and test

whereas

Engineering can be viewed as a self-correcting process of observations, analyses/synthesis, design, and test.

?-Why-?

Without the interplay of analyses and synthesis one can evolve neither the hypothesis or design and follow-on test nor the original "Simple-Minded Message" nor this presentation itself.

? - RAISES QUESTION - ?

What bearing does all this have
on
Winning and Losing

ILLUMINATION

Novelty is not only produced by the practice of science/engineering and the pursuit of technology, it is also produced by the forces of nature, by our own thinking and doing as well as by others. Furthermore, novelty is produced continuously, if somewhat erratically or haphazardly. Now, in order to thrive and grow in such a world we must match our thinking and doing, hence our orientation, with that emerging novelty. Yet, any orientation constrained by experiences before that novelty emerges (as well as by the Grand Message discussed earlier) introduce mismatches that confuse or disorient us. However, the analytical/synthetic process, previously described, permits us to address these mismatches so that we can rematch thereby reorient our thinking and action with that novelty. Over and over this continuing whirl of reorientation, mismatches, analyses/synthesis enables us to comprehend, cope with, and shape as well as be shaped by novelty that literally flows around and over us.

NOW

If we connect this continuing whirl of reorientation, mismatches, analyses/synthesis and the novelty that arises out of it with the previous discussion we can see that we have:

A Conceptual Spiral for

•	Exploration	-	Discovery	-	Innovation
•	Thinking	-	Doing	-	Achieving
•	Learning	-	Unlearning	-	Relearning
•	Comprehending	-	Shaping	-	Adapting

hence a Conceptual Spiral for generating

•	Insight	-	Imagination	-	Initiative
---	---------	---	-------------	---	------------

WHICH
? - RAISES THE QUESTION - ?

Can we survive and grow without these abilities?

! NO !

WHICH SUGGESTS

The conceptual spiral also represents:

A
Paradigm
for
Survival and Growth

POINT

Since survival and growth are directly connected with the uncertain, everchanging, unpredictable world of winning and losing we will exploit this whirling (conceptual) spiral of orientation, mismatches, analyses/synthesis, reorientation, mismatches, analyses/synthesis...so that we can comprehend, cope with, and shape, as well as be shaped by that world and the novelty that arises out of it.

Col Bishop

FROM: AWC/CCP

SUBJECT: Host Officer Duties

TO: HOST OFFICER

1. Air War College guest lecturers travelling under AWC funds are entitled to per diem and travel. They are also considered for honorarium payments of \$200 (\$100 for elective and advanced studies speakers) if they are non-government employees. I will ensure that all documentation necessary for reimbursements and honorariums is settled.

2. Our guests are billeted in government quarters. You are responsible for ensuring your guest makes payment for the use of these quarters and any other variable expenses such as long distance telephone calls and drinks. The room charge for guests staying in Brett Hall (Bldg 119) or the fifth floor of the University Inn (Bldg 157) is \$10 per day; all others are \$5.

3. During their visit, our guests are expected to pay for all meals since this is a part of their per diem. We can no longer pay for meals of most DOD personnel out of nonappropriated funds. It will be your responsibility to collect from the guest (or the guest's aide or exec) the amount due for lunch and/or dinner if there is one planned. (See cost of luncheon below.) I will charge the guest's lunch to your club card number unless you inform me otherwise. We can pay for meals for a select group of distinguished visitors who are employed by the Department of Defense. I will let you know if your guest falls into that category.

4. For a detailed description of your responsibilities, refer to the Checklist for Host Officers included in your package. The responsibility of ensuring that the visit of our guest is a memorable one belongs to you. If you should have any questions or encounter any problems, please don't hesitate to call me at extension 2492/2834 or at home 277-7103. Below is an itinerary of your guest's arrival and departure, your guest's room assignment, and the amount (if any) you should collect for lunch.

	<u>TIME</u>	<u>DATE</u>	<u>AIRLINE FLIGHT #/MIL AIR CALL SIGN</u>	
ETA	PM	15 OCT	POV	
ETD	AM	17 OCT	POV	
BILLETING ACCOMODATIONS:	SUITE NAME/RM #: Eaker Suite			BLDG #: 119
COST OF MEAL:	N/A			

Joni L. Grant

JONI L. GRANT
Chief, Visitors Bureau

phone in room
240-5624

FOR OFFICIAL USE ONLY

15 OCT 1991

VISIT OF MR JOHN BOYD

Visiting Party:

Mr John Boyd

Host Officer: Colonel Ray Bishop, USAF

Duty Phone: 953-2130 [REDACTED] [REDACTED]

ITINERARY

Tuesday, 15 October 1991

<u>Time</u>	<u>Location</u>	<u>Activity</u>	<u>Responsibility</u>
PM	Maxwell AFB AL	Arrival - POV	Mr Boyd
	Eaker Suite	Remain Overnight	Mr Boyd

Wednesday, 16 October 1991

0900	Eaker Suite	Pick up/Escort to AWC	Col Bishop/2130
1000-1200	AWC - Room 252B	Advanced Studies	Col Bishop/2130
1200-1205	Car with Host Ofcr	Enroute to Officers Club	Col Bishop/2130
1205-1315	Officers Club	Informal Lunch	Col Bishop/2130
1315-1320	Car with Host Ofcr	Enroute to AWC	Col Bishop/2130
1330-1530	Brooks Auditorium	Advanced Studies	Col Bihsop/2130

Thursday, 17 October 1991

AM	Maxwell AFB AL	Departure - POV	Mr Boyd
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15 OCT 1991

VISIT OF MR JOHN BOYD

Visiting Party:

Mr John Boyd

Host Officer: Colonel Ray Bishop, USAF
Duty Phone: 953-2130 [REDACTED] [REDACTED]

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